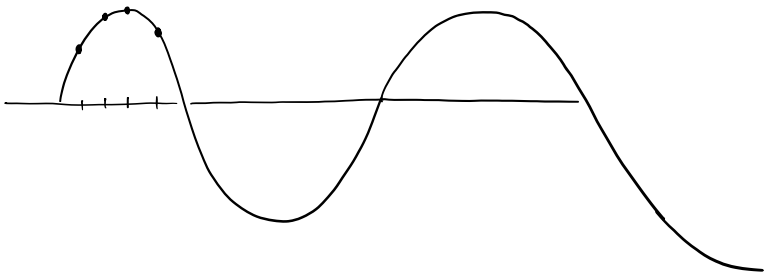

$N=4$

$q=2(4)+1$

Frequency — Alias Frequency

$0=0\cdot4+0$ $\quad 5=1\cdot4+1$

$1=0\cdot4+1$ $\quad 6=1\cdot4+2$

$2=0\cdot4+2$ $\quad 7=1\cdot4+3$

$3=0\cdot4+3$ $\quad 8=2\cdot4+0$

$4=4\cdot1+0$

$j=8-7$

c) $m=15$, $N=8$ $\quad 15=q8+r$ $\quad 15=1\cdot8+7$ $\quad q=1$, $r=7$, $j=1$

Ex: $f(t)=\sin(2\pi\cdot11\cdot t)$ $\quad g(t)=\sin(2\pi\cdot3\cdot t)$ $\quad$ upper half use j, lower half use r

$11=1(8)+3$

$N=8$

$\frac{N}{2}: f_{Ny}=4$

$\sin(2\pi\cdot11\cdot t) \downarrow \sin(2\pi\cdot3\cdot t)$

Ex $\sin(2\pi\cdot14\cdot t)$ $\quad m=qN+r$

$N=8$

$14=1(8)+6$

$m=14$, $q=1$, $r=6$, $j=2$ $\quad \sin(2\pi\cdot14\cdot t) \downarrow -\sin(2\pi\cdot2\cdot t)$

Aliasing

$N=8$ $\quad N_f=4$

$\sin(2\pi\cdot33\cdot t) \downarrow \sin(2\pi\cdot1\cdot t)$

$33=4\cdot8+1$: $r<N_f$ ∴ ↑

Euler Formulas

$e^{it}=\cos(t)+i\sin(t)$

$e^{it}=e^{-it}=\cos(-t)+i\sin(-t)$

$=(\cos(t)-i\sin(t)$

Imaginary #

$z=a+bi$ $\quad z=3+4i$

$|z|=\sqrt{a^2+b^2}$ $\quad$ real $=3$

imaginary $=4$